



UNITED STATES PATENT AND TRADEMARK OFFICE

cm
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/791,191

03/02/2004

Salman Akram

3854.3US (98-0854.03/US)

1968

24247 7590 04/19/2007

TRASK BRITT

P.O. BOX 2550

SALT LAKE CITY, UT 84110

EXAMINER

ROMAN, ANGEL

ART UNIT

PAPER NUMBER

2812

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|-----------|---------------|
|--|-----------|---------------|

3 MONTHS

04/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/791,191 | AKRAM, SALMAN | |
| | Examiner | Art Unit | |
| | Angel Jr Roman | 2812 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/11/06,01/17/07</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 3 and 4 are objected to because of the following informalities: In claim 1, line 6, and claim 4, line 5 the words "the one surface of" should be deleted since there is no antecedent basis for these limitations. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haji et al. U.S. Patent 5,909,633 filed 11/26/1999.

Regarding claims 1, 3, 4 and 6, Haji et al. discloses a method of forming a semiconductor device assembly, said method comprising; providing a substrate (11) having an upper surface and a lower surface; depositing a layer of copper (21, 24) on the upper surface and the lower surface of the substrate (11); patterning the layer of copper (21, 24) on the upper surface (see figure 4) and/or the lower surface of the substrate (11) to form at least one bond pad thereon; depositing at least one layer of gold (23, 26) on at least a portion of the layer of copper (21, 24); connecting one end of a conductive lead of a TAB tape to the at least one layer of gold (see column 6, lines 32-36). Haji et al. is applied as above but lacks anticipation on disclosing that a portion of the at least one layer of metal is consumed during the connecting of one end of a conductive lead of a TAB tape. It would have been obvious to a person having ordinary skills in the art at the time the invention was made to disclose that a portion of the at least one layer of metal is consumed during the connecting of one end of a conductive lead of a TAB tape in the primary reference of Haji et al. since Haji et al. suggest using a TAB in order to further describe the bonding process and ease understanding of the already suggested modification.

5. Claims 2, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haji et al. U.S. Patent 5,909,633 dated June 1, 1999 in view of Khandros et al. U.S. Patent 5,848,467.

Haji et al. is applied as above but lacks anticipation on using a wire bond to connect the conductive lead to the gold layer (23, 26). Khandros et al. discloses a

related method wherein a device assembly is connected to a substrate using a wire bond (see figure 29); therefore, it would have been obvious to a person having ordinary skills in the art at the time the invention was made to use a wire bonding method as disclosed in Khandros et al. in the primary reference of Haji et al. since it would provide a desired electrical path between the substrate and a device assembly. Furthermore Haji et al. discloses a wire bonding method and suggest using other connection methods for connecting the semiconductor element to the gold layer (see column 6, lines 31-36), therefore one having ordinary skills in the art at the time the invention was made would have found obvious to use TAB with a wire connection to the gold layer since Haji et al. clearly suggest using other electrical connection methods and using a wire to establish an electrical connection is widely used in the art.

Response to Arguments

6. Applicant's arguments filed 12/11/06 have been fully considered but they are not persuasive. Regarding applicant argument that Haji et al. does not disclose consuming a portion of the at least one layer of metal during the connecting of one end of a conductive lead of a TAB tape, this is not convincing because Haji et al. clearly suggest using a TAB bonding process as stated above, furthermore it is conventional knowledge in the art that a TAB bonding process would cause at least partial consumption of the one layer of metal as a consequence of the application of heat during the TAB process.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Jr Roman whose telephone number is (571) 272-6369. The examiner can normally be reached on IFP Mo-Fr 6am-3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AR
April 12, 2007


MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER